



Massachusetts Department of Environmental Protection  
Source Water Assessment and Protection (SWAP) Report  
for  
**Lenox DPW Water Division**

### What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

### Susceptibility and Water Quality

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area.

A source's susceptibility to contamination does *not* imply poor water quality.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, disinfecting, filtering, or treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Actual water quality is best reflected by the results of regular water tests. To learn more about your water quality, refer to your water supplier's annual Consumer Confidence Reports.

**Table 1: Public Water System Information**

<i><b>PWS Name</b></i>	Lenox DPW Water Division
<i><b>PWS Address</b></i>	275 Main Street
<i><b>City/Town</b></i>	Lenox
<i><b>PWS ID Number</b></i>	1152000
<i><b>Local Contact</b></i>	Richard Fuore
<i><b>Phone Number</b></i>	413-637-5525

### Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including storm runoff, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

#### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures.

Refer to Table 3 for Recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

#### This report includes the following sections:

1. Description of the Water System
2. Land Uses within Protection Areas
3. Source Water Protection
4. Appendices

## Section 1: Description of the Water System

### What is a Watershed?

A watershed is the land area that catches and drains rainwater down-slope into a river, lake or reservoir. As water travels down from the watershed area it may carry contaminants from the watershed to the drinking water supply source. For protection purposes, watersheds are divided into protection Zones A, B and C.

#### Source Name

#### Source ID

#### Susceptibility

Upper Root	1152000-04S	Moderate
Lower Root	1152000-01S	Moderate

Lenox DPW Water Division utilizes two reservoirs for their drinking water sources, and has the capability to purchase water from Pittsfield and Lee. The Root Reservoirs are in the highlands of western Lenox, north of Baldhead peak and hold a combined storage volume of 169 million gallons. The upper reservoir has two perennial feeder brook and one ephemeral brook. The regional geology of the reservoir site is mapped as biotite-rich quartzose schist, locally rich in pyrite; the remainder of the watershed area includes

areas of quartzose schist, rich in chlorite, garnet and interbedded metaquartzite. The overburden is comprised of glacial till. Reservoir Road runs between the two reservoirs: the Upper (1152000-04S) and Lower (1152000-01S) Root Reservoirs. The watershed for Lenox's reservoirs is primarily forested upland (95%) with the remaining 5% of the watershed consisting of transportation corridors, residential and non-commercial agricultural activities such as pasture land. The Water Department owns approximately 90% of the watershed with other conservation agencies such as Audubon owning a few percent of the remaining watershed. Please refer to the attached map to view the boundaries of the protective zones.

Water from the reservoirs flows to a treatment plant where the processes consist of chemical addition, flocculation, dissolved air flotation, and filtration. The water is chlorinated for disinfection prior to distribution. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report.

## Section 2: Land Uses in the Protection Areas

There are few activities that pose significant anthropogenic threats to the reservoirs. However, due to the relatively small size of the reservoir and the nature of surface water supplies, the sources are considered highly vulnerable to potential contamination. Land uses and activities that are considered potential sources of contamination are listed in Table 2.

### Key Land Uses and Protection Issues include:

1. Residential land use in Zone A/C
2. Forest/Watershed management
3. Transportation corridors
4. Public Access

The overall ranking of susceptibility to contamination for the system is high, based on the presence of at least one high threat land use within the water supply protection areas, as seen in Table 2.

**1. Residential Land Uses** – Approximately 0.6 acres of the Zone A and C consists of residential areas. None of the areas have public sewers, therefore on-site septic systems are used. However, it appears that the septic systems may be outside of the watershed or remote from the reservoir. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to

### Glossary Protection Zones

**Zone A:** is the most critical for protection efforts. It is the area 400 feet from the edge of the reservoir and 200 feet from the edge of the tributaries (rivers and/or streams) draining into it.

**Zone B:** is the area one-half mile from the edge of the reservoir but does not go beyond the outer edge of the watershed.

**Zone C:** is the remaining area in the watershed not designated as Zones A or B.

The attached map shows Zone A and your watershed boundary.

the groundwater because septic systems lead to the ground. If septic systems fail or are not properly maintained they can be a potential source of microbial contamination.

- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (UST and AST) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automotive leaks, maintenance, washing, or accidents.

#### Residential Land Use Recommendations:

- ✓ Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet “Residents Protect Drinking Water” available in Appendix A and on [www.mass.gov/dep/brp/dws/protect.htm](http://www.mass.gov/dep/brp/dws/protect.htm), which provides BMPs for common residential issues.
- ✓ Consider negotiating a Right of First refusal agreement or conservation restrictions for land not currently owned by the Town.

**2. Transportation Corridors** - Reservoir Road, a steep and narrow road is located along the base of the upper reservoir and immediately adjacent to the lower reservoir. Though this is a low-use roadway, the close proximity of the Reservoir Road to the reservoirs, typical roadway maintenance and use can pose a potentially significant source of contamination from accidents and washouts along the dirt road. De-icing materials, automotive chemicals

and other debris on roads are picked up by stormwater washed into catch basins and discharge into the reservoirs. The access road to the filtration plant has a drainage system that directs runoff through a swale and outside of the watershed.

#### Transportation Corridor Recommendations:

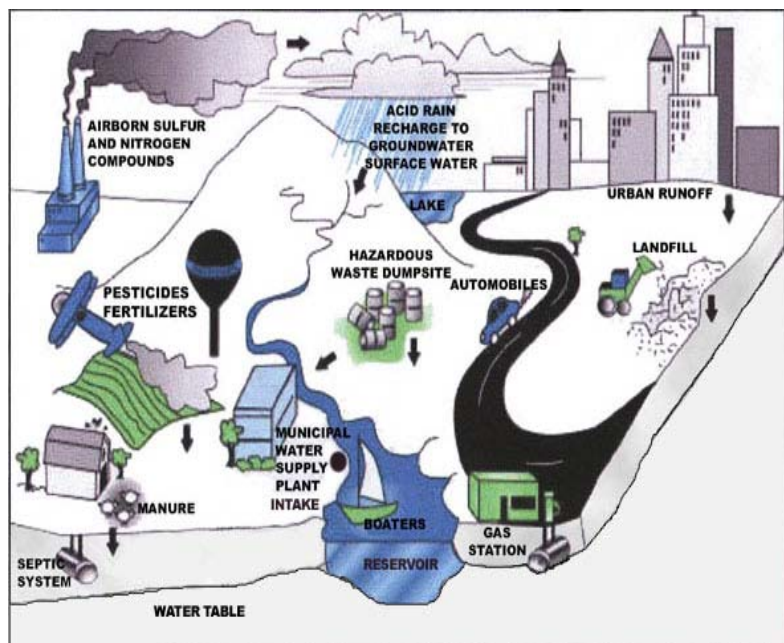
- ✓ Evaluate all options for management of access to Reservoir Road. Include evaluation of continuing current practice of full access, closing road to all traffic (abandonment of road), closing road to all commercial traffic and limiting access to residents with a locked gate and key for residents only. Richmond must be involved in discussions regarding access control on reservoir Road.
- ✓ Identify stormwater drains and the drainage system along reservoir road and the filtration plant access road. Evaluate tying the drainage system along

### Benefits of Source Protection

Source Protection helps protect public health and is also good for fiscal fitness:

- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.



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Figure 1: Sample watershed with examples of potential sources of contamination

Reservoir Road into the system along the access road to ensure stormwater discharges outside of the protection areas. Alternatively consider various strategies to detain/slow the flow and retain sediments for both the east and west side of Reservoir Road.

- ✓ Inspect, maintain, and clean catch basins on a regular schedule.
- ✓ Work with local emergency response teams to ensure effective management of potential spills. Include Richmond official in discussions regarding access to Reservoir Road.

**3. Forestry/Watershed management** – The majority of the watershed is logged periodically as recommended by the Town's contract forester; all activities are monitored and managed by the forester. However, there is no watershed/forest management plan at this time. There is no evidence of significant aquatic wildlife such as beavers or muskrats in the watershed at this time. The Northeast Rural Water Association (NeRWA) is commencing the preparation of a Watershed Protection Plan for the Lenox DPW Water Division.

- ✓ Include in the watershed protection plan, an evaluation for the need forest inventory and forest management plan specifically designed for watershed management.
- ✓ Evaluate whether there are impacts associated with access and determine what if any, management strategies required for public access to the watershed.
- ✓ Continue to inspect the watershed regularly.
- ✓ Right of way maintenance should be conducted by mechanical means. Supply all utilities and road maintenance crews with detailed maps of the watershed area where they may be conducting maintenance. Meet with the staff in charge of conducting the maintenance and confirm all stream crossings and Zone A areas are accurately mapped.

**4. Public Access** - Although the Water Department does not allow public access to the watershed, there is significant use of the old roads and trails throughout the watershed by hikers, ATV users and mountain bikers. Uncontrolled use can result in erosion, vandalism and refuse problems in the

watershed. One of the main trails is gated to prevent access by 4WD street vehicles.

- ✓ Evaluate the current extent of public access and include measurable negative or positive impacts.
- ✓ Prepare a plan to control those activities that pose a negative impact e.g. erosion, refuse disposal, threat to infrastructure. The recommendations could include increased patrols, physical barriers, public education or enforcement.

Land uses and activities within the Zone C that are potential sources of contamination are included in Table 2. One additional activity that was identified during the assessment was the potential for private airplanes flying over the reservoir. The Pittsfield Airport, located four miles north of the reservoirs results in frequent flyover of the reservoir. Although the airport is not within the watershed, the reservoir is on the takeoff and approach of the airport and experiences private planes flying over the



#### What are "BMPs?"

Best Management Practices (BMPs) are measures that are used to protect and improve surface water and groundwater quality. BMPs can be structural, such as oil & grease trap catch basins, nonstructural, such as hazardous waste collection days or managerial, such as employee training on proper disposal procedures.

#### Source Protection Decreases Risk

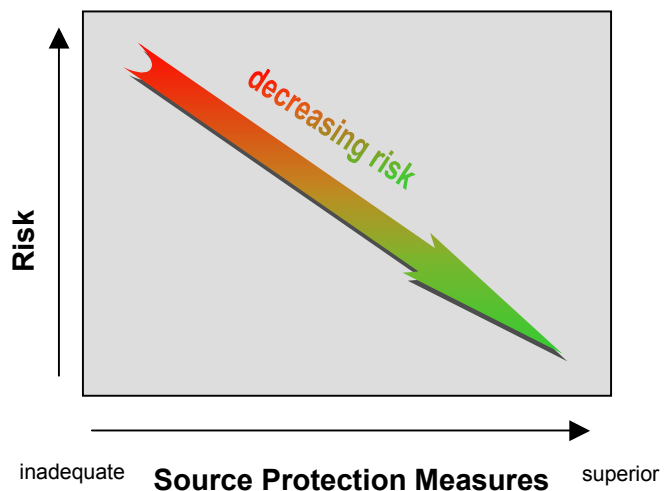


Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

## Potential Source of Contamination vs. Actual Contamination

The activities listed in Table 2 are those that typically use, produce, or store contaminants of concern, which, if managed improperly, are potential sources of contamination (PSC).

It is important to understand that a release may never occur from the potential source of contamination provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking identified in Table 2. Many potential sources of contamination are regulated at the federal, state and/or local levels, to further reduce the risk.

**Table 2: Land Use in the Watershed**

For more information, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area

Land Uses	Quantity	Threat	Potential Sources of Contamination*
<b>Residential</b>			
Fuel Oil Storage (at residences)	1	M	Fuel oil: spills, leaks, or improper handling
Lawn Care / Gardening	1	M	Pesticides: over-application or improper storage and disposal
Septic Systems	1	M	Hazardous chemicals: microbial contaminants, and improper disposal
<b>Miscellaneous</b>			
Forestry	Throughout	M	Runoff; mismanaged petroleum products; accidental spills, leaks
Aquatic Wildlife	Throughout	L	Microbial contaminants
Transmission Line Rights-of-Way -Type: Telephone	1	L	Corridor maintenance pesticides: over-application or improper handling
Transportation Corridors	1	M	Fuels and other hazardous materials: accidental leaks or spills; uncontrolled access to the reservoir

### Notes:

- When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the watershed may not contain all of these potential contaminant sources, may contain other potential contaminant sources, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.
- For more information on regulated facilities, refer to Appendix B: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
- For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix C: Tier Classified Oil and/or Hazardous Material Sites.

\* **THREAT RANKING** - The rankings (high, moderate or low) represent the relative threat of each land use compared to other PSCs. The ranking of a particular PSC is based on a number of factors, including: the type and quantity of chemicals typically used or generated by the PSC; the characteristics of the contaminants (such as toxicity, environmental fate and transport); and the behavior and mobility of the pollutants in soils and groundwater.



reservoir. It is recommended that the emergency response teams coordinate with the airport to establish a clear contact and communication in the event of an accident that may occur within the watershed. Identifying potential sources of contamination is an important initial step in protecting your drinking water sources. Further local investigation will provide more in-depth information and may identify new land uses and activities that are potential sources of contamination. Once potential sources of contamination are identified, specific recommendations like those below should be used to better protect your water supply.

### Section 3: Source Water Protection Conclusions and Recommendations

#### Current Land Uses and Source Protection:

Lenox's water supply is fairly well protected by the remoteness of the source and the percentage of land owned by the Town (90%). Additionally, a conservation group owns a significant portion of the remaining land. Although the system's protection areas contain few potential sources of contamination, the proximity of the activity to the water source increases the risk to the water supply. Implementing source protection measures reduces the risk of actual contamination. The water supplier is commended for taking an active role in promoting source protection measures in the Water Supply Protection Areas through:

- Ownership of over 90% of the watershed,
- Actively pursuing funds to prepare a watershed protection plan.

#### Source Protection Recommendations:

To better protect the sources for the future:

- ✓ Inspect the protection areas regularly, and when feasible, remove any non-water supply activities.
- ✓ Educate residents on ways they can help you to protect drinking water sources.
- ✓ Work with emergency response teams to ensure that they are aware of the stormwater drainage in your Zone C and to cooperate on responding to spills

#### Additional Information

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws) including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Contact Catherine V. Skiba in DEP's Springfield Office at (413) 755-2119 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, board of health, and the town.

or accidents.

- ✓ Work with landowners in your protection areas to make them aware of your water supply and to encourage the use of a best management practices for residential and recreational uses.
- ✓ Develop and implement Forest Management Plan for water supply protection.
- ✓ At a minimum, restrict road access to non-commercial vehicles only to minimize risk of hazardous contaminants.
- ✓ Request that the utility supply you directly with their maintenance plan. Provide AT&T an accurate map of the watershed and meet with their representative to ensure they are working with an accurate map.

#### Conclusions:

These recommendations are only part of your ongoing local drinking water source protection. Additional source protection recommendations are listed in Table 3, the Key Issues above and Appendix A.

DEP staff, informational documents, and resources are available to help you build on this SWAP report as you continue to

#### Top 5 Reasons to Develop a Local Surface Water Protection Plan

- ❶ Reduces Risk to Human Health
- ❷ Cost Effective! Reduces or Eliminates Costs Associated With:
  - ♦ Increased monitoring and treatment
  - ♦ Water supply clean up and remediation
  - ♦ Replacing a water supply
  - ♦ Purchasing water
- ❸ Supports municipal bylaws, making them less likely to be challenged
- ❹ Ensures clean drinking water supplies for future generations
- ❺ Enhances real estate values - clean drinking water is a local amenity. A community known for its great drinking water is a place people want to live and businesses want to locate.

**Table 3: Current Protection and Recommendations**

Protection Measures	Status	Recommendations
<b>Zone A</b>		
Does the Public Water Supplier (PWS) own or control the entire Zone A?	<b>NO</b>	Follow Best Management Practices (BMP's) that focus on good housekeeping, spill prevention, and operational practices to reduce the use and release of hazardous materials.
Is the Zone A posted with "Public Drinking Water Supply" Signs?	<b>YES</b>	Additional economical signs are available from the Northeast Rural Water Association (802) 660-4988.
Is the Zone A regularly inspected?	<b>YES</b>	Continue daily inspections of drinking water protection areas.
Are water supply-related activities the only activities within the Zone A?	<b>YES</b>	Continue monitoring non-water supply activities in Zone As.
<b>Municipal Controls</b> (Zoning Bylaws, Health Regulations, and General Bylaws)		
Does the municipality have Surface Water Protection Controls that meet 310 CMR 22.20C?	<b>YES</b>	The Town owns 90% of the watershed. Refer to <a href="http://www.state.ma.us/dep/brp/dws/">www.state.ma.us/dep/brp/dws/</a> for model bylaws, health regulations, and current regulations adopt further protection.
Do neighboring communities protect the water supply protection areas extending into their communities?	<b>NO</b>	Work with neighboring municipalities to include the watershed in their protection controls.
<b>Planning</b>		
Does the PWS have a local surface water supply protection plan?	<b>NO</b>	Develop a surface water supply protection plan. Follow "Developing a Local Surface Water Supply Protection Plan" available at: <a href="http://www.state.ma.us/dep/brp/dws/">www.state.ma.us/dep/brp/dws/</a> .
Does the PWS have a formal "Emergency Response Plan" to deal with spills or other emergencies?	<b>NO</b>	Augment plan by developing a joint emergency response plan with fire department, Board of Health, DPW, and local and state emergency officials. Coordinate emergency response drills with local teams.
Does the municipality have a watershed protection committee?	<b>NO</b>	Establish committee; include representatives from citizens' groups, neighboring communities, and the business community.
Does the Board of Health conduct inspections of commercial and industrial activities?	<b>YES</b>	For more guidance see "Hazardous Materials Management: A Community's Guide" at <a href="http://www.state.ma.us/dep/brp/dws/files/hazmat.doc">www.state.ma.us/dep/brp/dws/files/hazmat.doc</a>
Does the PWS provide watershed protection education?	<b>YES</b>	Aim additional efforts at commercial, industrial and municipal uses within the watershed.